

[0030] What is claimed is:

1. An apparatus comprising:

an outphasing modulator to provide at least first and second outphased signals to a power amplifier, wherein amplitudes of the first and second outphased signals are controlled, at least in part, by an amplitude modulation controller, which is able to vary an amplitude level of first and second control signals, respectively, according to a selected modulation method.

2. The apparatus of claim 1, wherein the first and second control signals modulate the first and second outphased signals, respectively, to provide a desired output power level of said power amplifier.
3. The apparatus of claim 1, wherein the selected modulation method is selected according to a position of the first and second outphasing signals on a complex plane.
4. The apparatus of claim 1, wherein the outphasing modulator comprises:  
a mixer to modulate a phase modulated signal according to the first control signal voltage level.
5. The apparatus of claim 1, wherein the outphasing modulator comprises:  
a variable gain amplifier controlled by the second control signal.
6. The apparatus of claim 4, wherein the outphasing modulator comprises:  
a poly-phase filter to generate at least first and second phase-shifted phase modulated signals and the phase modulated signal;

- a first combiner to combine the first phase-shifted signal and an amplitude modulated version of the phase modulated signal provided by the mixer; and
- a second combiner to combine the second phase-shifted signal and the amplitude modulated version of the phase modulated signal.

7. The apparatus of claim 5, wherein the variable gain amplifier comprises at least first and second variable gain amplifiers to amplify the first and second outphased signals, respectively.

8. A method comprising:

selecting a modulation method from a set of two or more modulation methods based on a position of an outphasing signal on a complex plane, wherein the position of the outphasing signal is determined based on a desired output power level.

9. The method of claim 8, wherein selecting comprises:

selecting from the set of modulation methods a first modulation method for a first region of the complex plane and a second modulation method for a second region of the complex plane.

10. The method of claim 8, wherein selecting comprises:

selecting from the set of modulation methods a first modulation method for a first region of the complex plane, a second modulation method for a second region of the complex plane, and a third modulation method for a third region of the complex plane.

11. The method of claim 10, further comprising:

generating the outphasing signal using the first modulation method by applying a first control signal to a mixer;

generating the outphasing signal using the second modulation method by applying the first control signal to a mixer and a second control signal to a variable gain amplifier; and

generating the outphasing signal using the third modulation method by applying the second control signal to the variable gain amplifier.

12. A wireless communication device comprising:
  - a dipole antenna operably coupled to a power amplifier;
  - an outphasing modulator to provide at least first and second outphased signals to the power amplifier, wherein amplitudes of the first and second outphased signals are controlled, at least in part, by an amplitude modulation controller, which is able to vary an amplitude level of first and second control signals, respectively, according to a selected modulation method.
13. The wireless communication device of claim 12, wherein the first and second control signals modulate the first and second outphased signals, respectively, to provide a desired output power level of said power amplifier.
14. The wireless communication device of claim 12, wherein the selected modulation method is selected according to a position of the first and second outphasing signals on a complex plane.
15. The wireless communication device of claim 12, wherein the outphasing modulator comprises:
  - a mixer to modulate a phase modulated signal according to the first control signal voltage level.
16. The wireless communication device of claim 12, wherein the outphasing modulator comprises:
  - a variable gain amplifier controlled by the second control signal.
17. The wireless communication device of claim 15, wherein the outphasing modulator comprises:

a poly-phase filter to generate at least first and second phase-shifted phase modulated signals and the phase modulated signal;

a first combiner to combine the first phase-shifted signal and an amplitude modulated version of the phase modulated signal provided by the mixer; and

a second combiner to combine the second phase-shifted signal and the amplitude modulated version of the phase modulated signal.

18. The wireless communication device of claim 16, wherein the variable gain amplifier comprises at least first and second variable gain amplifiers to amplify the first and second outphased signals, respectively.

19. A wireless communication system comprising:
  - a mobile station includes an outphasing modulator to provide at least first and second outphased signals to the power amplifier, wherein amplitudes of the first and second outphased signals are controlled, at least in part, by an amplitude modulation controller, which is able to vary an amplitude level of first and second control signals, respectively, according to a selected modulation method.
20. The wireless communication system of claim 19, wherein the first and second control signals modulate the first and second outphased signals, respectively, to provide a desired output power level of said power amplifier.
21. The wireless communication system of claim 19, wherein the selected modulation method is selected according to a position of the first and second outphasing signals on a complex plane.
22. The wireless communication system of claim 19, wherein the outphasing modulator comprises:
  - a mixer to modulate a phase modulated signal according to the first control signal voltage level.
23. The wireless communication system of claim 19, wherein the outphasing modulator comprises:
  - a variable gain amplifier controlled by the second control signal.
24. The wireless communication system of claim 22, wherein the outphasing modulator comprises:

a poly-phase filter to generate at least first and second phase-shifted phase modulated signals and the phase modulated signal;

a first combiner to combine the first phase-shifted signal and an amplitude modulated version of the phase modulated signal provided by the mixer; and

a second combiner to combine the second phase-shifted signal and the amplitude modulated version of the phase modulated signal.

25. The wireless communication device of claim 23, wherein the variable gain amplifier comprises at least first and second variable gain amplifiers to amplify the first and second outphased signals, respectively.